PATENT
Attorney Docket No. LIGO-009/02US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	Susan WIMER-MACKIN	Confirmation No.:	5685
Serial No.:	10/589,290	Group Art Unit:	1645
Filed:	August 11, 2006	Examiner:	Patricia Ann Duffy
For:	ANTHRAX ANTIGENS AND METHODS OF USE		

DECLARATION UNDER 37 C.F.R. § 1.131

I, Susan Kagel declare as follows:

1. I am the named inventor of the above-identified U.S. Application No. 10/589,290 (the '290 application), previously Susan Wimer-Mackin.

2. I understand that a publication to Miksztra *et al.* (Journal of Infectious Diseases, Vol. 191: 278-288, January 15, 2005) has been cited as prior art in the above-identified application and allegedly discloses dry powder formulations of recombinant protective antigen, CpG, trehalose, and chitosan loaded into capsules for intranasal delivery with a device.

3. I understand that Miksztra *et al.* was published electronically on December 15, 2004. I also understand that the Examiner has deemed that some of the claims are entitled to a priority date of February 11, 2005, the filing date of the '290 application.

4. The subject matter of the pending claims (*e.g.*, dry powder compositions comprising anthrax antigens) was invented by me (the named inventor) prior to December 15, 2004.

5. Example 5, for instance, of the present application describes dry powder formulations of vaccine compositions comprising protective antigen and their effectiveness in inducing a protective immune response in rabbits when administered intranasally using a powder

administration device. Tables 12, 13, and 15 describe four dry powder compositions (**D1, D3, D5, and D6**) in comparison to two liquid formulations (L8 and L10) in inducing an immune response to anthrax in rabbits.

6. Exhibits A and B, dated before December 15, 2004, are pages from the laboratory notebook of Sarah J. Warwood, who was working under my direction at the time. Exhibit A sets forth the experimental protocol for testing the dry powder formulations in eliciting protective immunity against anthrax in rabbits. This protocol is identical to the experiment disclosed in Example 5 in the instant application. Exhibit B depicts the execution of this protocol and describes the dose and route of administration of each formulation.

7. Thus, Exhibits A and B document the production of the identical dry powder compositions described in Example 5 of the present application and immunization of rabbits with such compositions before December 15, 2004.

8. I further declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-referenced application or any patent issuing thereon.

Respectfully submitted,

Susan W. Kagel

Susan Kagel

November 11, 2009

Date

EXHIBIT A

Proof of principal experiments for West Pharm. And LigoCyte

BD601.132

Experiment 3. (Experiments 1 and 2 done in-house at LigoCyte.)
Objective: To determine if intranasal powder formulations of PA and MPL with chitosan can protect rabbits against virulent anthrax challenge.

# rabbits	Formulation	Treatment
5	D1	Negative control
10	D3	PA+MPL+Chitosan (high dose)+ Caps10 conj
10	D5	PA+MPL+Chitosan (high dose)+Caps10
10	D6	Dry PA+MPL + Caps10 conj (no chitosan)
10	L8	PA+MPL+ Caps10 conj
10	L10	AVA

55 rabbits (female, NZW) will be used. All immunizations will be intranasally, except for AVA which will be given i.m. (AVA is included as it is the standard anthrax vaccine that is known to protect via adaptive immunity.) PA dose will be 90 μg and MPL 25 μg. Rabbits will be immunized at 0 and 4 weeks. Serum will be collected at 0, 4 and 8 weeks. Nasal washes collected at 8 weeks. Animals will then be shipped to Ft. Detrick, MD for aerosol challenge with virulent anthrax spores. Animals that are still alive 2 weeks post-challenge will be deemed protected. (Note: We may not be able to get all animals into challenge due to space restraints at the challenge facility. If that is the case, we could challenge less of each group.)
Serum and nasal washes will be analyzed for anti-PA and anti-capsule IgG and IgA responses.

- start
- spray device to Mark

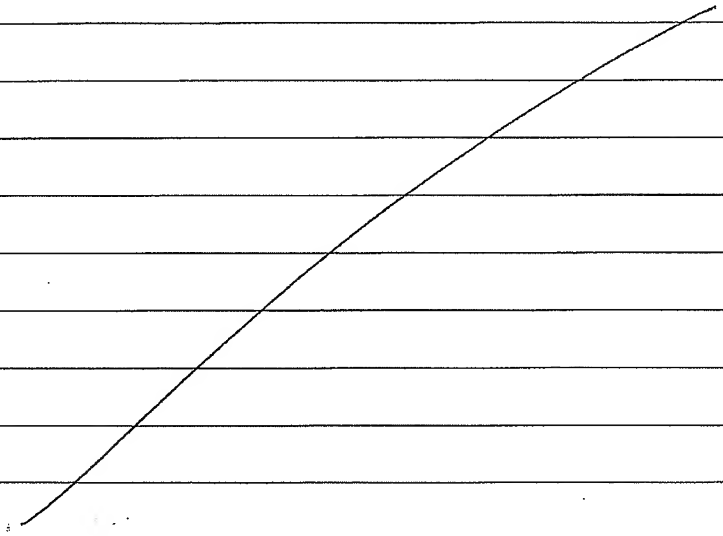

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EXHIBIT B

Preparations of Vaccines **West 20mg, IN 200µl, IM 100µl, Buffer 150mM NaCl**

Group 1 – Group 4 provided in spray device from West Pharmaceuticals

Group 5 **PA 90µg + MPLaf 25µg + conj caps10mer 90µg**
10 rabbits IN

10+2extra = 12 x 200µl = 2.4ml
108µl of PA (10mg/ml)
+300µl MPL(1mg/ml)
+ µl conj caps10mer → pg 167
+ µl buffer

Group 6 **PA 90µg/MPLaf 25µg** **10 rabbits IM**

10+2extra = 12 x 100µl = 1.2ml
108µl of PA (10mg/ml)
+300µl MPL(1mg/ml)
+ 792µl buffer

JS

BD601.132
PA/Chitosan West Pharmaceuticals Dry Formulations

	Vaccine		Delivery
Group 1	**Neg control (Dry West)** D1	**5 rabbits**	**Sprayer**
Group 2	**PA + MPLaf +Chitosan +conj caps10mer** D3 **(Dry West)**	**10 rabbits**	**Sprayer**
Group 3	**PA 90µg/Chitosan/MPLaf 25µg + caps10mer** D5 **(Dry West)**	**10 rabbits**	**Sprayer**
Group 4	**PA + MPL + conj caps10mer** D6 **(Dry West)**	**10 rabbits**	**Sprayer**
Group 5	**PA 90µg + MPLaf 25µg + 90µg conj caps10mer (Liquid Ligocyte)**	**10 rabbits**	**IN**
Group 6	**PA 90µg + MPLaf 25µg**	**10 rabbits**	**IM**

55 Rabbits NZ White Females

Day 0 – Vaccinate and Bleed

4 Week - Boost and Bleed

8 Week - Bleed

12 Week - Terminal bleed and BAL

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Work continued to Page X

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